

PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Adjustable Supporting Means for Shelves and the like

I, EDGAR MEYER, of South African Nationality, of 32, Rietfontein, Birchleigh, Transvaal Province, Republic of South Africa, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to adjustable supporting means for shelves and the like, and more particularly to shelf structures of the kind in which shelf carrying bracket elements and like parts are adjustably connected at different positions to rigidly mounted and spaced upright members.

According to the present invention adjustable supporting means for shelves or the like comprises elongated upright members each having a single longitudinal groove in at least one external side face thereof, supporting bracket elements each having a thickened stepped portion on an end region of one side face thereof, said stepped portion being of a width substantially equal to the width of said groove, and clamping means including a tensionable member extending transversely of the elongated upright member substantially perpendicular to the grooved side face for holding the thickened stepped portion in engagement with the groove in the upright member against relative lateral separation.

More particularly, each upright member provides at least one grooved side, which groove is of shallow depth. The extent of projection of the thickened stepped portion from a side face of each supporting bracket element is substantially equal to the depth of the groove in the elongated upright member.

The means for holding a bracket element against separation from said portion of the upright member, preferably comprises a ten-

sionable member for drawing the thickened stepped portion into the groove.

Conveniently, the tensionable member consists of a bolt and nut which bolt passes through a transverse hole in the supporting bracket, said hole being at a position in outward spaced relationship to the thickened stepped portion such that the bolt, when engaging said hole, is disposed outwardly of and across the transverse edge face of the grooved side of the upright member. A washer member is associated with said bolt and nut and is adapted to engage that face of the upright member opposite to the grooved face engaged by the supporting bracket element.

A spacer may be provided through which the bolt extends for location on the supporting bracket element face and adjacent the edge face of the grooved side of an upright member. The spacer may provide an edge face for engaging the outwardly directed edge face of the grooved side of an upright member.

The spacer may be in the form of a circular washer of a thickness substantially equal to the width of said grooved upright member. Preferably, said washers are of non-circular shape, e.g. of elliptical, sectoral, segmental, rectangular or other such shape. Such spacers may be non-rotatably clamped by the bolt and nut onto a face of the bracket element.

In a modified form the outwardly directed transverse edge face of the grooved side of each upright member may present a non-smooth surface, e.g. serrated-like formations, and each spacer is provided with a rough surface or complementary formations on the edge face portion for engagement on said edge face of the upright member.

Each supporting bracket element may be in the form of a cantilever arm having one or more shelf carrying flanges on the part ex-

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tending from an upright member. Alternatively, each bracket may be in the form of a beam having a thickened stepped portion on opposite ends for engagement with a pair of spaced upright members.

Each upright member may be constructed to form two or more spaced bracket element coupling portions each having a longitudinal groove for receiving the thickened stepped portion of separate bracket elements.

In a preferred form of construction of the invention, the upright members and the bracket elements are constructed from a heavy gauge sheet metal. The upright members are constructed from strips of such sheet metal folded along longitudinal fold lines to the required shape. The thickened stepped portion on an end of a bracket element is formed by folding a parallel marginal end region inwardly and flat onto a side face of the element. Pairs of such elements may be fixed together in back to back relationship to present thickened stepped portions on opposite faces. With a beam-like bracket element, such thickened stepped portions are provided on both ends.

The invention will be further described, by way of example, with reference to the accompanying drawings, in which:—

Figure 1 is an isometric view of an upright member and a cantilever type shelf support bracket element coupled thereto, according to one embodiment of the present invention;

Figure 2 is a horizontal cross section of Figure 1 on the axis of the bolt;

Figure 3 is a view similar to Figure 2 showing a modification;

Figure 4 is a view of the spacer used in the form of the invention shown in Figure 3;

Figures 5 and 6 are fragmentary isometric views of an application of the invention to provide two shelf supporting flanges;

Figures 7 and 8 are fragmentary isometric views showing two forms of composite bracket elements according to the invention; and

Figure 9 is an isometric view of a beam-like shelf supporting element coupled to a pair of spaced upright members, also according to the invention.

Referring to the drawings, an upright member, denoted by reference numeral 1, comprises a heavy gauge sheet metal strip folded along longitudinal fold lines to angle iron-like cross-sectional shape and presents a fixing flange 2 and a bracket element coupling flange 3. The coupling flange 3 has a marginal portion 4 which is doubled upon itself with its free edge 5 terminating in spaced relationship to the fixing flange 2 to form between them a longitudinal groove 6 on one side face of the upright member 1.

A bracket element 7 is also composed of a heavy gauge sheet metal piece of the same thickness as the sheet metal from which the

upright members 1 are produced. The bracket element 7 is of a generally right angled triangular shape and provided with a notch in the right angled corner the distal end being preferably truncated. Along one of the sides adjacent the right angle, a marginal portion is bent to form a perpendicular flange 8 for supporting a shelf, the other of said adjacent sides having a marginal portion doubled over upon itself to form a thickened stepped portion 9 of constant width on a face 10 of the bracket 7.

In the bracket 7, in spaced relationship to the stepped portion 9, a transverse hole is provided for a clamping bolt 11. The width of the thickened stepped portion 9 is substantially the same as the width of the upright member groove 6 in which it is slidable. The thickness of the stepped portion 9 is substantially the same as the depth of said groove 6.

A clamping plate or washer 12 is provided which is adapted for clamping onto the ungrooved face 13 of the coupling flange 3 of the upright member 1, while a spacer 15 is preferably provided between such clamping plate 12 and the face 10 of bracket elements 7.

For coupling a bracket element 7 to an upright member 1, the thickened stepped portion 9 is engaged in the groove 6 and the bolt 11 is passed through the hole of the bracket element, through or past the spacer 15 and the clamping plate 12, so that, on tightening of a nut 14 onto the bolt 11, the bracket element is clamped transversely onto the coupling flange 3 to prevent separation in a transverse direction. On loading of the bracket element 7, after coupling, the edge face of the thickened stepped portion 9 and the end of the bracket element present regions which pressingly engage the free marginal edge face 5 of the marginal portion 4 of the upright member 1 and the face of the fixing flange 2, whereby movement of the bracket element 7 along the upright member 1 is frictionally restrained, such action being aided by the clamping engagement of the coupling flange 3 between the bracket element face 7 and the clamping plate 12. The thickness of the spacer 15 could be slightly less than the thickness of the doubled over longitudinal portion of the coupling flange 3.

In Figures 3 and 4, the spacer 15 is in the form of a washer 15a and presents one straight face 16, which may bearingly engage on the edge face 17 presented by the folded over region of the coupling flange 3. Said straight face 16 of the spacer 15a and the edge face 17 of the upright member, may be roughened, serrated or provided with other non-smooth surfaces, so that, on loading of the bracket element, relative movement of such faces on one another is restrained to thereby prevent movement of the bracket element 7

along the upright member 1. The shape of the spacer 15 may be of elliptical, square, rectangular or any other shape.

The spacer 15 may be non-rotatably clamped by the bolt 11 onto face 10 of the bracket element 7.

In Figure 5, two bracket elements constructed as left handed and right handed brackets are secured together in back to back relationship, thus providing a universal bracket capable of clamping onto upright members having the groove 6 on a left hand or on a right hand face.

In the form shown in Figure 6, two upright members 1 are mounted with the ungrooved faces 13 in engagement thus providing a composite upright member presenting the grooves 6 on opposite sides and engageable by left handed and right handed bracket elements. The elements are secured by the common bolt 11. A spacer may be provided between such bracket elements for retention in parallel spaced relationship. Said bracket elements may be secured together in such parallel spaced relationship.

Figures 7 and 8 show modified forms of the bracket elements and present composite bracket elements. With reference to Figure 7, the flanged arm supporting member 18 of the bracket member is separate from the thickened stepped portion 19 and is adapted to form the spacer presenting a face 16 for engaging the edge face 17 of an upright member 1. The clamping plate 12 and the stepped portion 19 receive a holed end part 20 of the supporting member 18 between them, while the bolt 11 passes through all of them. As the supporting member 18 is preferably constructed from sheet material of the same thickness as the upright member 1, a packing piece or pieces 21 is provided between the complementary faces of the thickened stepped portion 19, holed portion 20 of the supporting member 18 and the clamping plate 12. The transverse surface presented by the edge face of the supporting member 18 should be sufficient to retain said supporting member in the cantilever position.

In the embodiment shown in Figure 8, the supporting member 18 of a composite bracket element is composed of two separate portions 18a presenting flanges 8 extending in opposite directions. The said portions 20 are clamped between a thickened stepped portion 19 and the clamping plate 12 by the bolt 11 eliminating packing piece 21. Said left and right handed arm parts 18a may be fixed together such as by rivets, spot welding or the like.

Figure 9 illustrates a bracket element 22 which, instead of being of a cantilever type, is in the form of a beam having thickened stepped portions 9 on one face and at opposite ends for engagement and coupling in a similar fashion to the cantilever type of

bracket element onto a pair of spaced upright members 1. Should one end of such beam-like bracket element 22 sag relative to the other, the clamping action by the thickened stepped portions 9 within the groove 6 become effective and restrains or prevents further relative movement of either end of such beam-like bracket element 22 relative to the upright members 1.

WHAT I CLAIM IS:—

1. Adjustable supporting means for shelves or the like comprising elongated upright members each having a single longitudinal groove in at least one external side face thereof, supporting bracket elements each having a thickened stepped portion on an end region of one side face thereof, said stepped portion being of a width substantially equal to the width of said groove, and clamping means including a tensionable member extending transversely of the elongated upright member substantially perpendicular to the grooved side face for holding the thickened stepped portion in engagement with the groove in the upright member against relative lateral separation.

2. Adjustable supporting means as claimed in Claim 1, in which the extent of projection of the thickened stepped portion of each supporting bracket element is substantially equal to the depth of the groove in the upright member.

3. Adjustable supporting means as claimed in Claim 1 or 2 in which the tensionable member is adapted for drawing the thickened stepped portion into the groove the upright member for holding a supporting bracket element in engagement with the grooved face of an upright member against relative lateral separation.

4. Adjustable supporting means as claimed in Claim 3, in which a transverse hole is provided in each supporting bracket element for receiving a threaded bolt at a position in outwardly spaced relationship to the thickened stepped portion whereby the bolt is disposed remote from and perpendicular to the upright member.

5. Adjustable supporting means as claimed in Claim 4 further comprising a washer-like member, associated with the bolt, for engaging a side face of the upright member opposite to the grooved side engaged by the supporting bracket element.

6. Adjustable supporting means as claimed in Claim 4 or 5 further comprising a spacer through which the bolt extends and which extends and which spacer is located against the face of the supporting bracket element which carries the thickened stepped portion and adjacent the outwardly directed edge face of the upright member.

7. Adjustable supporting means as claimed in Claim 6 in which the spacer provides an

edge face for engaging the outwardly directed edge face of the upright member. 50

8. Adjustable supporting means as claimed in Claim 6 in which the outwardly directed edge face of each upright member is of serrated-like formation; and a portion of the circumferential surface of the spacer is provided with complementary serrations for non-slipping engagement on the upright member. 55

9. Adjustable supporting means as claimed in Claims 6, 7 or 8, in which the spacer is of non-circular shape. 60

10. Adjustable supporting means as claimed in any one of Claims 1 to 9, in which each supporting bracket element is in the form of any arm having one or more shelf carrying flanges on a part thereof and being adapted to extend in cantilever fashion from an upright member. 65

11. Adjustable supporting means as claimed in any one of claims 1 to 9 in which each supporting bracket is in the form of a beam having a thickened stepped portion at each end for engagement and coupling onto a spaced pair of upright members. 70

12. Adjustable supporting means as claimed in Claim 7 or 8 in which the spacer is provided with an arm-like extension with which shelf or load supporting devices are associated. 75

13. Adjustable supporting means as claimed in Claim 12 in which the spacer comprises two flanged arm members arranged next to one another and together forming along one end a transverse face adapted for abutting engagement on the outwardly directed edge face of an upright member. 80

14. Adjustable supporting means as claimed in any one of Claims 1 to 8 in which each supporting bracket element comprises a plate having a thickened stepped portion on one face and along the edge of one end and further having a transverse hole in spaced relationship to said thickened stepped portion, a holed clamping plate, a spaced adapted for location between the plate having the thickened stepped portion and the clamping plate and having a rigid arm-like extension and a hole adjacent one end and also a transverse face at the holed end, shelf supporting flange means on the arm-like extension, holed packing pieces between the spacer and the plate having the thickened stepped portion and the clamping plate and a bolt and nut of which the bolt passes through the holes of the stepped plate, the spacer, the packing pieces and the clamping plate. 85

15. Adjustable supporting means, as claimed in any one of claims 1 to 14 in which the upright member or the supporting bracket elements or parts of the composite bracket elements or all are constructed from heavy gauge sheet metal of which regions are folded flat upon themselves to form the grooves and the thickened stepped portions. 65

16. Adjustable supporting means as claimed in Claim 15 in which each upright member is constructed from a strip of heavy gauge sheet metal and folded along longitudinal fold lines to form the groove. 70

17. Adjustable supporting means as claimed in Claim 16 in which each upright member is of angle-like cross-sectional shape of which one flange forms a fixing flange for such upright member and the other flange has a longitudinal marginal region doubled over flat onto the inside face of such flange to form the groove between its free edge and the inner face of the fixing flange. 75

18. Adjustable supporting means as claimed in Claim 15 in which the thickened stepped portion on the end of a bracket element is formed by doubling a marginal end region flat onto one side face of the element. 80

19. Adjustable supporting means as claimed in Claim 18 in which pairs of bracket elements are secured together in back to back relationship and present thickened stepped portions on opposite faces. 85

20. Adjustable supporting means constructed and arranged substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings. 90

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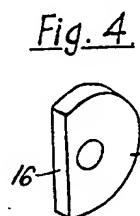
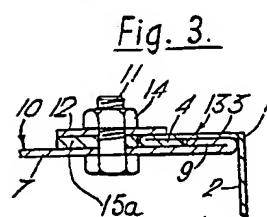
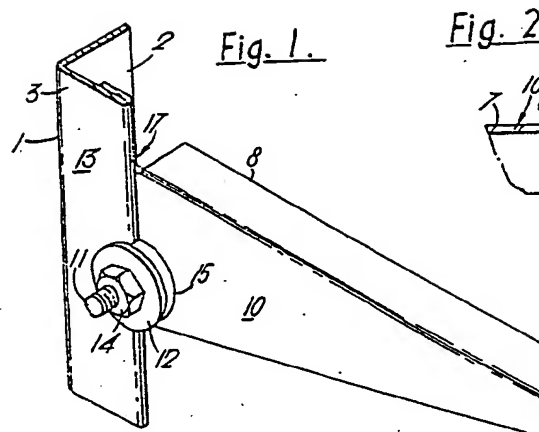
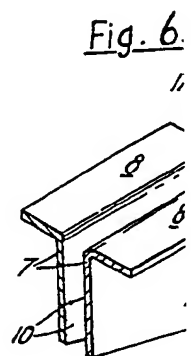
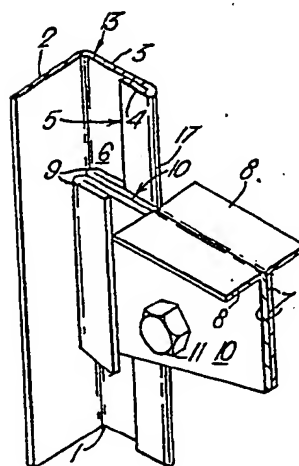
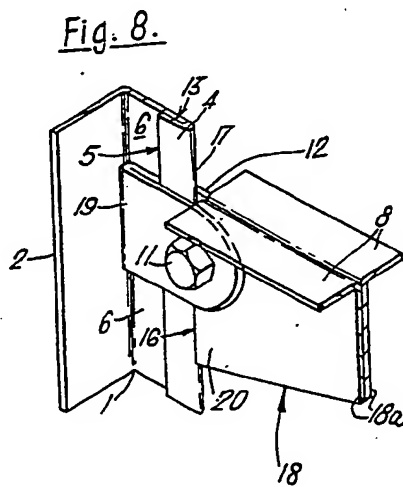
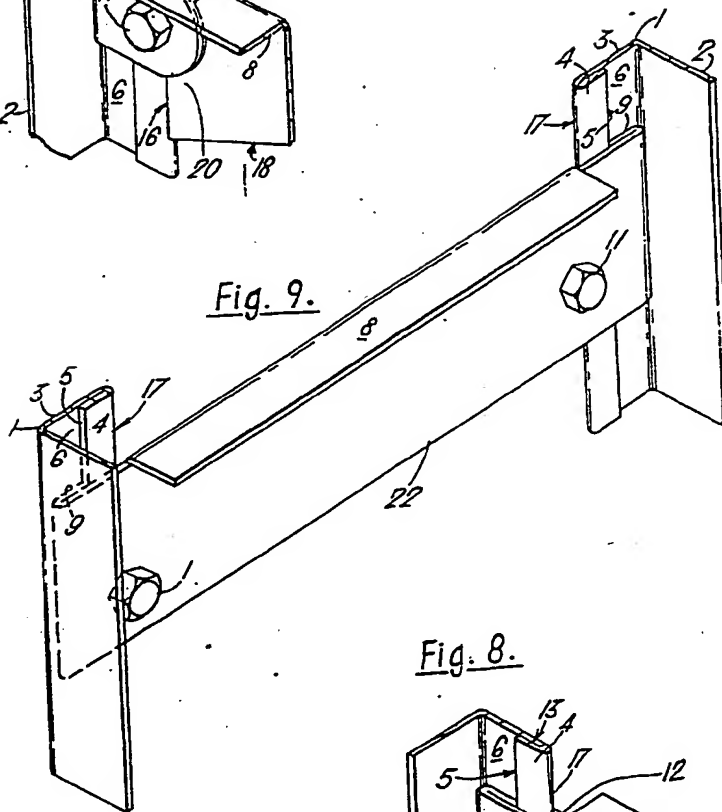
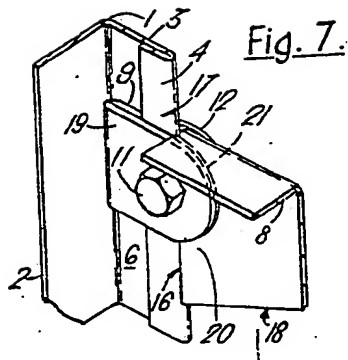
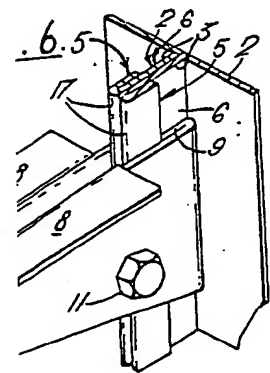
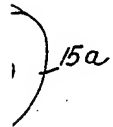
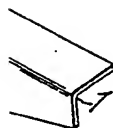
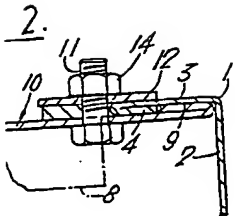


Fig. 5.





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COMPLETE SPECIFICATION
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the Original on a reduced scale
2 SHEETS
Sheets 1 & 2

